

Quantum Materials Publication List (1 Oct 2013 – 1 Oct 2014)

Primary publications

- 1) "Harnessing the spin-orbit and electronic properties of a 5d correlated semimetal by epitaxial constraints", Jian Liu, D. Puggioni, J.-H. Chu, C. Rayan Serrao, D. Yi, J. D. Koralek, C. Nelson, C. Frontera, D. Kriegner, L. Horak, X. Marti, Y. Choi, E. Arenholz, [J. Orenstein, A. Vishwanath](#), J. M. Rondinelli, and [R. Ramesh](#), *Nature Communications*, in press, **2014**.
- 2) "Anisotropic magnetoresistance in antiferromagnetic semiconductor Sr₂IrO₄ epitaxial heterostructure", X. Marti, I. Fina, D. Yi, Jian Liu, J.-H. Chu, C. Rayan-Serrao, S. Suresha, J. Železný, T. Jungwirth, J. Fontcuberta, [R. Ramesh](#), *Nat. Commun.* vol. 5, p. 4671, **2014**.
doi:10.1038/ncomms5671
 - a. We acknowledge the support from the NSF (Nanosystems Engineering Research Center for Translational Applications of Nanoscale Multiferroic Systems, Cooperative Agreement Award EEC-1160504). We acknowledge partial support from the US Department of Energy (J.H.C., S.S. and R.R.) as well as the SRC-FAME programme through UCLA (C.R.-S.). T.J. acknowledges support from the EU European Research Council (ERC) advanced grant no. 268066, from the Ministry of Education of the Czech Republic grant no. LM2011026, from the Grant Agency of the Czech Republic grant no. 14-37427G and from the Academy of Sciences of the Czech Republic Praemium Academiae. X.M. acknowledges the Grant Agency of the Czech Republic No. P204/11/P339. A.B.S. acknowledges the financial support from GACR P204/10/0330. Financial support by the Spanish Government (Projects MAT2011-29269-C03, CSD2007-00041) and Generalitat de Catalunya (2009 SGR 00376) is acknowledged. I.F. acknowledges Beatriu de Pinós postdoctoral scholarship (2011 BP-A 00220) from the Catalan Agency for Management of University and Research Grants (AGAUR- Generalitat de Catalunya).
- 3) "Impact of work function induced electric fields on laser-based angle-resolved photoemission spectroscopy", A. Fero, C. L. Smallwood, G. Affeldt, and [A. Lanzara](#), *J. Electron Spectrosc. Relat. Phenom.*, vol. 195, p. 237-243, **2014**. DOI: 10.1016/j.elspec.2014.01.008
- 4) "Probing the chiral anomaly with nonlocal transport in Weyl semimetals", S.A. Parameswaran, T. Grover, D. A. Abanin, D. A. Pesin, [A. Vishwanath](#), *Phys Rev Lett* vol. 4, p. 031035, **2014**. DOI: [10.1103/PhysRevX.4.031035](https://doi.org/10.1103/PhysRevX.4.031035)
 - a. We thank L. Balents, J. H. Bardarson, A. Burkov, Y.-B. Kim, R. Ilan, N. P. Ong and B. Z. Spivak for useful discussions on transport, F. de Juan, I. Kimchi, P. Dumitrescu, N. P. Ong and especially A. Potter for conversations on Dirac semimetals, and an anonymous referee for comments on an earlier version of this manuscript. This work was supported in part by: the Simons Foundation (SAP); the NSF under Grant No. PHYS-1066293 and the hospitality of the Aspen Center for Physics (SAP, DAP); the Director, Office of Science, Office of Basic Energy Sciences, Materials Sciences

and Engineering Division, of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231 (AV); and the Institute for Quantum Information and Matter, an NSF Physics Frontiers Center with support of the Gordon and Betty Moore Foundation through Grant GBMF1250 (DAP).

- 5) "Induced magnetization in La_{0.7}Sr_{0.3}MnO₃/BiFeO₃ superlattices", S. Singh, J. T. Haraldsen, J. Xiong, E. M. Choi, P. Lu, D. Yi, X.-D. Wen, Jian Liu, H. Wang, Z. Bi, P. Yu, M. R. Fitzsimmons, J. L. MacManus-Driscoll, [R. Ramesh](#), A. V. Balatsky, Jian-Xin Zhu, Q. X. Jia, *Phys. Rev. Lett.* vol. 113, p. 047204, **2014**. DOI: 10.1103/PhysRevLett.113.047204
 - a. This work was supported by the LANL/LDRD program and the Center for Integrated Nanotechnologies (CINT) at Los Alamos National Laboratory. This work has benefited from the use of the Lujan Neutron Scattering Center, which is funded by the Department of Energy's Office of Basic Energy Sciences. P. L. acknowledges support from Sandia National Laboratories, a multi-program laboratory managed and operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Security Administration under contract No. DE-AC04 94AL85000. H. W. acknowledges the funding support from the U.S. National Science Foundation (DMR-0846504 and DMR-1401266). J. L. M-D. acknowledges the ERC Advanced Investigator Grants No. NOVOX ERC-2009-adG247276, and No. EPSRC. S. Singh, J. T. Haraldsen, and J. Xiong contributed equally to this work.
- 6) "Realization of a three-dimensional spin-anisotropic harmonic honeycomb iridate", K. A. Modic, Tess E. Smidt, Itamar Kimchi, Nicholas P. Breznay, Alun Biffin, Sungkyun Choi, Roger D. Johnson, Radu Coldea, Pilanda Watkins-Curry, Gregory T. McCandless, Julia Y. Chan, Felipe Gandara, Z. Islam, [Ashvin Vishwanath](#), Arkady Shekhter, Ross D. McDonald and [James G. Analytis](#), *Nature Communications* vol. 5, p. 4203, **2014**. DOI: 10.1038/ncomms5203
- 7) "Low-energy Magnetic Excitations from the Fe_{1+y-z}(Ni/Cu)_zTe_{1-x}Se_x System, Zhijun Xu, Jinsheng Wen, J. Schneeloch", A. Christianson, [R. Birgeneau](#), G. Gu, J. Tranquada, and G. Xu., *Phys. Rev. B* vol. 89, p. 174517, **2014**. DOI: 10.1103/PhysRevB.89.174517
 - a. The work at Brookhaven National Laboratory and Lawrence Berkeley National Laboratory was supported by the Office of Basic Energy Sciences (BES), Division of Materials Science and Engineering, U.S. Department of Energy (DOE), under Contract Nos. DE-AC02-98CH10886 and DE-AC02-05CH1123, respectively. Research at Oak Ridge National Laboratory's High Flux Isotope Reactor was sponsored by the Division of Scientific User Facilities, BES, DOE.
- 8) "Neutron scattering measurements of spatially anisotropic magnetic exchange interactions in semiconducting K_{0.85}Fe_{1.54}Se₂ (T_N=280 K)", Jun Zhao, Yao Shen, [R. J. Birgeneau](#), Miao Gao, Zhong-Yi Lu, [D.-H. Lee](#), X. Z. Lu, H. J. Xiang, D. L. Abernathy, and Y. Zhao, *Phys. Rev. Lett.* vol. 112, p. 177002, **2014**. DOI: 10.1103/PhysRevLett.112.177002

- a. We thank D. X. Yao for helpful discussions. J. Z. and Y. S acknowledge the start-up support from Fudan University and NSFC (Grant No. 11374059). The research at UC Berkeley is supported by the Director, Office of Science, Office of Basic Energy Sciences, U.S. Department of Energy, under Contracts No. DE-AC02-05CH11231, No. DE-AC03-76SF008, and No. DE-AC02-05CH11231. M. G. and Z.-Y. L. are supported by NSFC (Grants No. 11190024 and No. 91121008). The research at Oak Ridge National Laboratory's Spallation Neutron Source is sponsored by the Scientific User Facilities Division, Office of Basic Energy Sciences, U. S. Department of Energy.
- 9) *"Edge Physics of the Quantum Spin Hall Insulator from a Quantum Dot Excited by Optical Absorption"*, R. Vasseur and [J.E. Moore](#), *Phys. Rev. Lett.* vol. 112, p. 146804, **2014**. DOI: [10.1103/PhysRevLett.112.146804](https://doi.org/10.1103/PhysRevLett.112.146804)
- a. This work was supported by the Quantum Materials program of LBNL (R. V) and NSF Grant No. DMR-1206515 (J. E. M.). We thank J. Dahlhaus and D. Goldhaber-Gordon for insightful discussions. R. V. also wishes to thank D. Kennes, V. Meden, and H. Saleur for collaborations on related matters.
- 10) "Time- and momentum-resolved gap dynamics in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ ", Christopher L. Smallwood, Wentao Zhang, Tristan L. Miller, Chris Jozwiak, Hiroshi Eisaki, [Dung-Hai Lee](#) and [Alessandra Lanzara](#), *Phys. Rev. B* vol. 89, p. 115126, **2014**. DOI: [10.1103/PhysRevB.89.115126](https://doi.org/10.1103/PhysRevB.89.115126)
- 11) "Signatures of superconductivity and pseudogap formation in non-equilibrium nodal quasiparticles revealed by ultrafast angle-resolved photoemission", Wentao Zhang, Christopher L. Smallwood, Chris Jozwiak, Tristan Miller, Yoshiyuki Yoshida, Hiroshi Eisaki, [Dung-Hai Lee](#) and [Alessandra Lanzara](#), *Phys. Rev. B* vol. 88, p. 245132, **2013**. DOI: [10.1103/PhysRevB.88.245132](https://doi.org/10.1103/PhysRevB.88.245132)
- 12) *"Enhanced low-energy magnetic excitations via suppression of the itinerancy in $\text{Fe}_{(0.98-z)}\text{Cu}_{(0.98-z)}\text{Cu}_z\text{Te}_{0.5}\text{Se}_{0.5}$ "*, Jinsheng Wen, Shichao Li, Zhijun Xu, Cheng Zhang, M. Matsuda, O. Sobolev, J. T. Park, A. D. Christianson, [E. Bourret-Courchesne](#), Qiang Li, Genda Gu, [Dung-Hai Lee](#), J. M. Tranquada, Guangyong Xu, and [R. J. Birgeneau](#), *Phys. Rev. B* vol. 88, p. 144509, **2013**. DOI: [10.1103/PhysRevB.88.144509](https://doi.org/10.1103/PhysRevB.88.144509)

Collaborative papers

- 1) "Evolution of Antiferromagnetic Susceptibility under Uniaxial Pressure in $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)\text{As}_2$ ", Chetal Dhital, Tom Hogan, Z. Yamani, [R. Birgeneau](#), W. Tian, M. Matsuda, A. Sefat, Z. Wang, and S. Wilson, *Phys. Rev. B* vol. 89, p. 214404, (2014). DOI: [10.1103/PhysRevB.89.214404](https://doi.org/10.1103/PhysRevB.89.214404)

- 2) "Electric field control of magnetism using BiFeO₃-based heterostructures", J. T. Heron, D. G. Schlom, and [R. Ramesh](#), *Applied Physics Reviews* 1, 021303, **2014**. DOI: [10.1063/1.4870957](https://doi.org/10.1063/1.4870957)
- 3) "Doping dependence of the anisotropic quasiparticle interference in NaFe_{1-x}Co_xAs iron-based superconductors", Peng Cai, Wei Ruan, Xiaodong Zhou, Cun Ye, Aifeng Wang, Xianhui Chen, [Dung-Hai Lee](#) and Yayu Wang, *Phys. Rev. Lett.* vol. 112, p. 12700, **2014**. DOI: 10.1103/PhysRevLett.112.127001
- 4) "Room-temperature antiferromagnetic memory resistor", Marti, X.; Fina, I.; Frontera, C.; Liu, Jian; Wadley, P.; He, Q.; Paull, R. J.; Clarkson, J. D.; Kudrnovsky, J.; Turek, I.; Kunes, J.; Yi, D.; Chu, J-H.; Nelson, C. T.; You, L.; Arenholz, E.; Salahuddin, S.; Fontcuberta, J.; Jungwirth, T.; [Ramesh, R.](#), *Nature Materials*, vol. 13, p. 367-374, **2014**. doi:10.1038/nmat3861